

# Results of the Cancer Teaching Program In Medical Schools

By **RAYMOND F. KAISER, M.D.**

**T**HE Public Health Service program of grants to medical schools to coordinate the teaching of cancer has completed its seventh year. The program, administered by the National Cancer Institute, has been expanded since its beginning in June 1947 until 82 of the Nation's medical schools are currently participating.

The basis of the institute's cancer teaching program was a conference report entitled "Cancer in the Medical School Curriculum," published in August 1947 by the National Advisory Cancer Council, which recommended financial assistance to medical schools prepared to undertake an integrated cancer teaching program. It summarized the findings of a conference at the National Cancer Institute in 1946, attended by deans and professors from a number of medical schools and representatives of the National Research Council, the American Cancer Society, the National Advisory Cancer Council, and other units of the Public Health Service.

Cancer in the Medical School Curriculum helped formulate the objectives of the program essentially as follows:

Development of an awareness of cancer among medical students.

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*Dr. Kaiser is chief of the Field Investigations and Demonstrations Branch of the National Cancer Institute, National Institutes of Health, Public Health Service.*

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Effective utilization of current knowledge to supplement gaps in the students' information on cancer.

Reduced emphasis in class instruction on the incurability of cancer.

Coordination of cancer teaching in any manner which would provide the student, at some time during the course of his studies, with a comprehensive concept of the disease in all its aspects.

Emphasis on the need for group presentation and consultation in the discovery, diagnosis, and treatment of cancer.

Stimulation of student interest in cancer research.

Increased participation of the internist in cancer teaching.

Improvement of medical service to cancer patients.

It was obvious from the beginning of the program that effective methods of coordinating the teaching of cancer would vary from school to school. The National Cancer Institute had no desire to suggest a uniform instruction plan to all participating institutions. It was decided, then, that each school should have an opportunity to develop the type of teaching program best adapted to its particular method and philosophy of medical training and most suited to its personnel and available facilities. A policy of permitting complete academic freedom in curriculum matters was adopted at the beginning and has never been changed. Moreover, allocation of grant funds was left, as far

as possible, to the discretion of participating schools with the reservation that these funds should not be used to replace existing budgetary commitments or to underwrite specific research projects.

Since the program is by nature long-range, it was clear when the project was introduced that continuity was essential, and the institute has provided all possible assurance of continuity. All approved medical schools are considered eligible for grant funds. In 1947, the National Advisory Cancer Council recommended a maximum of \$25,000 annually for each 4-year medical school and \$5,000 annually for each 2-year school. These amounts have remained the same throughout the program.

The extent of participation for the 82 medical schools in the country receiving funds under this grant program follows.

<i>Schools</i>	<i>Year of participation</i>
46-----	7th
26-----	6th
4-----	5th
2-----	4th
1-----	3d
3-----	1st

When the program began, one of the council's recommendations was that the dean and faculty of each medical school review the cancer teaching methods then practiced in their own institutions. These reviews indicated that with very few exceptions the following conditions prevailed:

There was duplication in teaching some facets of the subject.

Some aspects of cancer were incompletely covered in the course of instruction and others were entirely omitted.

In some instances, conflicting information was presented on the same phase of the subject by different departments.

Only ordinary emphasis was given to cancer in the routine instruction.

There was little systematized cancer instruction.

Cancer teaching consisted almost entirely of individual departmental courses of instruction. Definite correlation in an overall curriculum was lacking.

Minimal opportunity was provided for the student to learn the natural history or course of the disease.

Most of the teaching was didactic in nature with minimal opportunities for clinical instruction.

An inadequate number of instructors and faculty members were actively interested in cancer teaching.

No organized body or specific individual was available to integrate cancer teaching.

### **Coordinator of Cancer Teaching**

A project which might be described as an experimental program in cancer education was established in the medical schools as a result of these survey findings. It was recognized that considerable integration would be necessary to realize the purposes of the program. The establishment of a position variously titled but essentially that of "coordinator of cancer teaching" was found to be the best method of accomplishing the desired integration. Each participating school designated a staff member to serve as coordinator. In some schools this individual was already a member of the faculty. In many instances, however, it was necessary to recruit qualified persons from outside the institutions. At present 39 surgeons, 22 pathologists, 10 radiologists, 6 internists, 1 gynecologist, 1 dermatologist, 1 urologist, 1 bacteriologist, and 1 dean are serving as cancer coordinators.

It is interesting to note that 53 of the individuals initially designated as cancer coordinators have served in this capacity throughout the duration of the grant program. In the remaining schools, there have been one or more changes in this position. One reason for changes has been increased capability on the part of coordinators. In one school which has had three changes, one former coordinator became director of a large State cancer hospital; another was named chief of surgery at a recently established city cancer hospital, and a third has gone to another university to become associate professor of surgery and director of the tumor clinic. While there has been a good deal of turnover in some of the coordinator positions, it is believed that this is an

index of the worthwhile nature of the grants, in that they afford the schools an opportunity to recruit qualified men to their faculties.

Establishment of cancer coordinator positions has been one of the most potent program factors in improving the quality of cancer teaching. In fact, the alternative of a new and separate department of cancer teaching has led various departments in some schools to make a determined effort to improve the quality of their instruction in order to keep the subject in their curriculums. Three schools have established separate departments of oncology, and three others have formed divisions of oncology. The remaining schools have established a variety of administrative arrangements to stimulate the integration of cancer teaching.

The mere existence of a coordinator and the availability of grant funds have served as a stimulus to focus the attention of the medical school faculty on the cancer problem. This, in turn, has led to the establishment in the schools of cancer committees whose membership includes heads of major services and departments and such other officials as individual schools find appropriate. Initially, these committees tended to be composed of representatives of the clinical departments. However, as time went on, representatives of the preclinical departments were included. As the usefulness of the committees became apparent, more schools adopted the idea, and cancer committees are currently found in all schools participating in the program. These committees, operating through interdepartmental cooperation, have been one of the most effective means of bringing about the integration of cancer teaching.

### **Changes in Teaching Methods**

The focusing of attention on the cancer problem led to a number of experiments, some successful and others unsuccessful, in the schools' approach to teaching the subject. The institutions present many variations in their programs to improve undergraduate medical education in cancer. However, a number of changes in cancer teaching which have resulted from the grant program are common to many of the participating schools.

Practically all the institutions have come to

consider a teaching tumor clinic essential to cancer instruction. At the beginning of the program, 43 of the schools had tumor clinics. But in most instances the clinics were operated as staff or service functions with a limited number of patients, inadequate followup procedures, and little or no student participation. Under the grant program, these schools have expanded and improved their general tumor clinics and some special departmental tumor clinics as well. Since its inception, the grant program has also been instrumental in motivating the establishment of tumor clinics in 30 additional schools. All these clinics are currently operating as teaching clinics with active student participation required. A tremendous increase in the students' contact with clinical material and improved services to cancer patients have resulted from these practices.

Hand-in-hand with increased clinical facilities has gone an increase in the number of teaching tumor conferences or tumor board presentations. This method of teaching has been initiated in 43 of the schools since the program began. Existing tumor conferences in 20 schools have been strengthened and expanded during the same period. All the tumor conferences are operated as teaching sessions with active student participation.

### **Additional Hours and Courses**

Although it would be misleading to attempt to evaluate the effect of the teaching grants in terms of additional hours in the curriculum devoted to cancer instruction, it is noteworthy that all participating schools have in fact increased their cancer teaching hours. In general, this has been accomplished through a rearrangement of hours of instruction, revision in content of the material taught, elimination of needless repetition, the addition of material previously omitted, and increased emphasis on cancer in existing departmental instruction. Increased emphasis on cancer instruction in pathology was reported by 68 schools, in radiology by 43, in surgery by 41, in gynecology by 28, in medicine by 24, in biochemistry by 18, in anatomy by 12, in dermatology by 8, in physiology by 7, and in ophthalmology and otolaryngology by 5.

The fact that 52 schools have added one or

more new cancer courses to the curriculum is of special interest. Some of the courses were initially elective; but as the program progressed, they were incorporated into the regular curriculum and have been established as required courses. Some are in the nature of orientation courses which attempt to correlate the basic sciences and clinical medicine. Specific endeavors in this area through the initiation of correlation clinics or correlation courses have been reported by 27 schools. Other new courses are concerned with physical diagnosis and special cancer diagnostic procedures. Still others deal with the biology of cancer, carcinogenesis, cancer etiology and epidemiology, cancer research, and experimental cancer.

Twenty-two schools have found it desirable to extend their cancer teaching in the field of cytology. Cytology laboratories have been established under these grants in 10 of the 22 schools. Isotope laboratories were established by 6 schools, which, also, together with 9 other schools, extended their cancer teaching into the field of radioisotopes.

During the program there has been a definite increase in the use of the team-teaching technique. To implement this type of teaching, 27 schools have initiated cancer symposiums or cancer seminars in which the students actively participate.

Small group ward teaching has been introduced into 22 schools since the beginning of the program. All the schools have shown a strong trend to introduce the student to cancer patients earlier in his career, to increase his contacts with cancer patients, especially his diagnostic encounters, and generally to widen his clinical experience. The schools have shown a corresponding decrease in didactic lectures.

### **Increased Staff and Equipment**

A large personnel force is necessary for the increased cancer teaching indicated above, and 65 of the schools report that the grants have permitted them to increase their professional staffs. In this group there are 23 schools in which the cancer coordinator represents at least a part of the increased personnel. Reports from 45 schools indicate that they have been able to add to their staffs such ancillary em-

ployees as medical artists, technicians, photographers, social workers, clinic secretaries, clerks, statisticians, record librarians, clinic nurses, and physicists.

The grants have enabled all the schools to increase markedly their visual educational materials, including kodachromes, lantern slides (clinical and pathological), models, mouldages, museums, filmstrips and films, and such equipment as cameras and projectors. In order to prepare their own materials, 11 schools established photographic departments. A number of cancer films have been produced by three of the schools.

Under this program, the majority of the schools have strengthened their pathology service through the preparation and collection of lantern slides (clinical and pathological) or by the addition of equipment like projectors, technicians' microscopes and scopicons. Tumor registers have been established by 18 schools and cancer registers, together with followup programs, by 33 others. Such services have enabled 17 schools to include social and psychological problems of cancer patients in their teaching. Moreover, these services have brought about an improvement in the medical records of at least half the schools. Reports from 55 of the schools say that the program has stimulated cancer research in their institutions and that this research has resulted in increased interest in the cancer field among students and faculty members. In this connection, 20 schools provide student fellowships under the grants, largely for student assistance on research projects.

### **Use of Grant Funds**

Although the original intention was to restrict grant support to undergraduate teaching, it has become apparent that the program cannot be dissociated from other interested groups. The fact that 26 schools have established visiting lectureship programs which are open to medical students, interns, residents, house officers, and practicing physicians is evidence that cancer teaching has spread into the postgraduate area.

The effectiveness of the cancer teaching program cannot be reduced, of course, to a numeri-

cal evaluation. However, the above enumeration does provide some indication of the results of the grants. Another perspective may be provided by a brief analysis of the utilization of grant funds over the years. In the first years of the program, the funds were distributed as follows: Approximately 64 percent was allocated for personnel, 23 percent for permanent equipment, 6 percent for consumable supplies, 2 percent for travel, 2 percent for other expenses, and 3 percent for overhead. A considerable portion of the first grants was necessarily used for permanent equipment. Since then there has been a progressive increase in the portion used for personnel and a proportionate decrease in the amount used for equipment. The percentage allotted to overhead has been slightly more than doubled, but it has never reached the 8 percent allowable for this item. The amount used for travel has increased 1 to 2 percent while the portion for consumable supplies and other expense has decreased 1 to 2 percent. Approximately 85 to 90 percent of the total funds are currently used for personnel, with the remaining 10 to 15 percent distributed among the other five categories.

### **Accomplishments**

Despite the difficulties of providing specific and indisputable evidence of the results of these grants, it is possible to point to a number of general accomplishments under the program:

It has greatly increased, in all probability, the awareness of cancer not only among medical students but also in medical school faculties.

It has stimulated the schools to make remarkable changes in cancer teaching practices.

It has promoted the use of several types of visual aids which help materially in the communication of factual information to students.

In addition to visual aid material, it has provided other improved teaching equipment and tools.

It has increased clinical instruction in cancer.

It has increased the emphasis on group presentation and consultation in the discovery, diagnosis, and treatment of cancer.

It has increased the use of current knowledge about the disease through additional and supplementary courses of instruction.

It has improved medical service to cancer patients through the establishment of new and additional cancer clinics and by the provision of funds for needed clinic equipment.

It has stimulated student interest in cancer research and assisted in the development of cancer research programs in many schools.

It has resulted in a greater interest in cancer teaching.

It has enabled institutions to obtain and retain qualified teachers who might not otherwise have joined medical school faculties.

It has provided funds for the establishment of cytology and isotope laboratories.

It has provided funds for the establishment of photographic and medical illustration departments.

It has assisted in the establishment of more adequate record systems and in the development of followup programs.

It has made evident the need for cancer instruction in postgraduate fields and has furthered such teaching.

It has brought about coordination of cancer teaching, largely through increased interdepartmental cooperation, in both the preclinical and clinical years, and has materially improved the teaching.

It has focused attention not only on cancer but also on the ascending prominence of other diseases related to later life. It has achieved curriculum changes and changes in the concepts of medical education in keeping with the shifting demands indicated by this situation.

Lastly, it has caused a beneficial chain reaction in that improved cancer teaching has led to better teaching in general in the medical schools. In the final analysis the beneficial effects of this program cannot be based on the formulation of instruction techniques and their organization within the medical school curriculum. The program must be measured by the long-range effect the teaching will have on the reduction of cancer mortality.